

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
12 September 2003 (12.09.2003)

PCT

(10) International Publication Number
WO 03/075054 A1

(51) International Patent Classification⁷: **G02B 6/12**

(21) International Application Number: **PCT/EP02/02465**

(22) International Filing Date: **6 March 2002 (06.03.2002)**

(25) Filing Language: **English**

(26) Publication Language: **English**

(71) Applicant (for all designated States except US): **PIRELLI S.P.A.** [IT/IT]; Viale Sarca, 222, I-20126 Milano (IT).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **ROMAGNOLI, Marco** [IT/IT]; Via della Moscova, 66, I-20121 Milano (IT). **TORMEN, Maurizio** [IT/IT]; Via Agordo, 13, I-32100 Belluno (IT). **BONATI, Camilla** [IT/IT]; Via S. Sofia, 21, I-20122 Milano (IT).

(74) Agents: **BATTIPEDE, Francesco et al.**; Pirelli S.P.A., Viale Sarca, 222, I-20126 Milano (IT).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW.

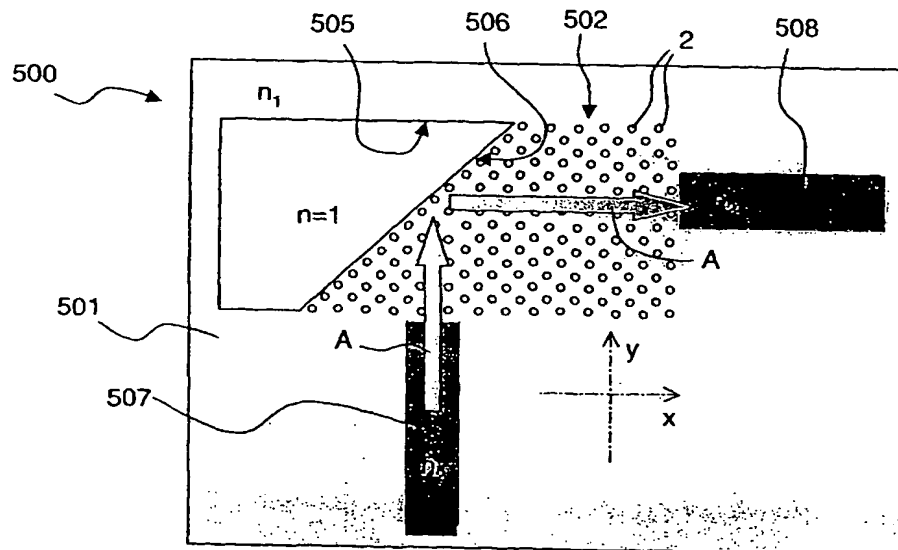
(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: **DEVICE FOR BENDING AN OPTICAL BEAM, IN PARTICULAR IN AN OPTICAL INTEGRATED CIRCUIT**



(57) **Abstract:** A device (500) for varying the direction of an optical beam (A), comprises a first waveguide (507) directed along a first direction, a second waveguide (508) directed along a second direction different from the first direction, and a bending region interposed between the first and the second waveguide, wherein the bending region comprises a photonic crystal (502) having a regular periodicity and at least a first and a second crystal axes substantially aligned with said first and second directions, and a reflecting surface (506) delimiting said photonic crystal and so positioned and oriented as to reflect an optical beam coming from the first waveguide towards the second waveguide.